

Amendments to the Claims:

This listing of claims will replace all prior versions and listings, of claims in the application:

Listing of Claims:

Claims 1-6	Withdrawn
Claim 7	Cancelled
Claims 8-15	Withdrawn
Claims 16-18	Cancelled
Claim 19	Withdrawn
Claims 20-28	Cancelled
Claims 29-32	Withdrawn
Claims 33-34	Cancelled
Claims 35-36	Withdrawn
Claim 37	Cancelled

Claim 38 (Currently Amended) An isolated nucleic acid comprising a sequence selected from the group consisting of:

- (a) the sequences of SEQ ID NOS: 1, 3-and 5, and
- (b) sequences encoding polypeptides which comprises the amino acid sequences of SEQ ID NOS: 2, 4, and 6, and
- (c) sequences which, owing to the degeneracy of the genetic code, encode the same amino acid sequence as the amino acid sequences of SEQ ID NOS: 2, 4, and 6.

Claim 39 (Currently Amended) An isolated nucleic acid which encodes a polypeptide from tobacco with the bioactivity of a phytoene synthase, comprising the amino acid sequence of SEQ ID NO: 2.

Claim 40 (Currently Amended) An isolated nucleic acid according to Claim 39, wherein the nucleic acid encodes a polypeptide withconsisting of the amino acid sequence of SEQ ID NO: 2.

Claim 41 (Currently Amended) An isolated nucleic acid according to Claim 39, wherein the nucleic acid is a single-stranded or double-stranded DNA or RNA.

Claim 42 (Currently Amended) An isolated nucleic acid according to Claim 41, wherein the nucleic acid is a cDNA or a fragment of genomic DNA-or-RNA.

Claim 43 (Currently Amended) An isolated nucleic acid according to Claim 39, wherein the nucleic acid is derived from tobacco plants.

Claim 44 Cancelled

Claim 45 (Previously Presented) A DNA construct comprising a nucleic acid according to Claim 39 and a heterologous promoter.

Claim 46 (Previously Presented) A vector comprising a nucleic acid according to Claim 39.

Claim 47 (Previously Presented) A vector according to Claim 46, wherein the nucleic acid is linked functionally to regulatory sequences which ensure the expression of the nucleic acid in pro-prokaryotic or eukaryotic cells.

Claim 48 (Previously Presented) A host cell containing a nucleic acid according to Claim 39.

Claim 49 (Previously Presented) A host cell according to Claim 48, wherein the host cell is a prokaryotic cell.

Claim 50 (Previously Presented) A host cell according to Claim 48, wherein the host cell is an eukaryotic cell.

Claim 51 (Currently Amended) A process for generating a polypeptide with the bioactivity of a phytoene synthase which is encoded by ~~a nucleic acid the polynucleotide of SEQ ID NO: 1 including an amino acid sequence of SEQ ID NO: 2,~~ comprising

- (a) (a1) culturing a host cell comprising a nucleic acid which encodes ~~a the polypeptide comprising the amino acid sequence of SEQ ID NO: 2 under conditions which ensure the expression of the nucleic acid, or~~
(a2) expressing a nucleic acid which encodes ~~a the polypeptide comprising the amino acid sequence of SEQ ID NO: 2 in an *in-vitro* system, and~~
- (b) obtaining the polypeptide from the cell, the culture medium or the *in-vitro* system.

Claim 52 (Previously Presented) A vector comprising a DNA construct according to Claim 45.

Claim 53 (Previously Presented) A host cell containing a DNA construct according to Claim 45.

Claim 54 (Previously Presented) A host cell containing a vector according to Claim 46.

Claim 55 (Currently Amended) A process for generating a polypeptide with the bioactivity of a phytoene synthase which is encoded by a nucleic acid ~~the polynucleotide of SEQ ID NO: 1 including an amino acid sequence of SEQ ID NO: 2,~~ comprising

(a) (a1) culturing a host cell comprising a nucleic acid comprising a sequence selected from the group consisting of

- (i) ~~the sequence of SEQ ID NO: 1, and~~
- (ii) sequences encoding a polypeptide which comprises the amino acid sequence of SEQ ID NO: 2,
- (iii) sequences which hybridize with the sequences defined under (i) or (ii),
- (iv) sequences which are complementary to the sequences defined under (i) or (ii), and
- (v) sequences which, owing to the degeneracy of the genetic code, encode the same amino acid sequence as the sequences defined under (i) or (ii);

in a culture medium under conditions which ensure the expression of the nucleic acid, or

(a2) expressing a nucleic acid which encodes a polypeptide with the bioactivity of a phytoene saturase, comprising the amino acid sequence of SEQ ID NO: 2 in an *in-vitro* system, and

(b) obtaining the polypeptide from the cell, the culture medium or the *in-vitro* system.

Claim 56 (Currently Amended) An isolated organism selected from plants, plant parts of plants, protoplasts, plant tissues or plant propagation materials, wherein the organism comprises a polypeptide with the bioactivity of a phytoene synthase which is encoded by a nucleic acid ~~which comprises the polynucleotide of SEQ ID NO: 1, including an amino acid sequence of SEQ ID NO: 2 whose bioactivity or expression pattern is modified in comparison with the corresponding endogenous polypeptides.~~

Claim 57 Cancelled

Claims 58-76 Withdrawn